Learning Experiences Built Using the TLA Experience API
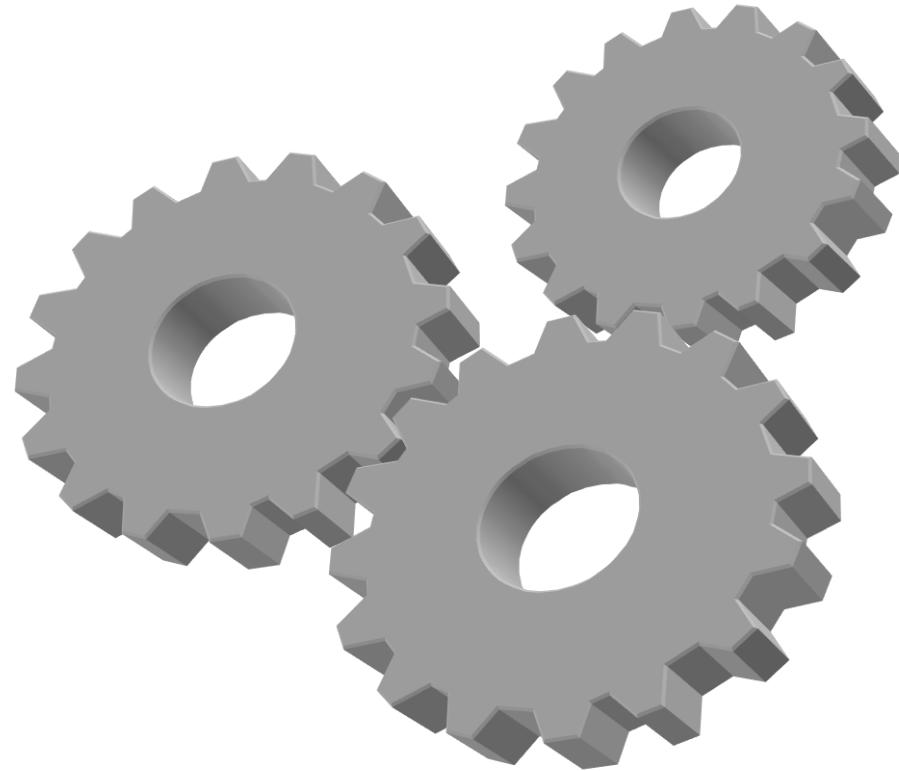
Nikolaus Hruska

ADL Technical Team

Contractor with Problem Solutions

Acronym Definitions

- *TLA* – Training and Learning Architecture (a.k.a. "Next Generation SCORM")

- *(Experience) API* – Application Programming Interface
- (a.k.a. "Tin Can API")

What is it?

Credit: Liz Burow (@Burlix)

Why do we need a new API?

- Launch and track native mobile apps
- Allow me to get my data
- Manage group learning
- Launch and track full-scale simulators
- Track data beyond scores, completion, success…
- Assess after learning
- Manage learning not 'known' by the LMS
- Let me 'own' my data
- Etc.

Why Not Use SCORM?

- Mobile Learning happens outside of a desktop browser

- Launch via Frames, JavaScript API - worked for browsers and modalities *of the time* (PC, laptop)

- Sequencing – can be too difficult for easy cases or too constraining on ISDs for complex cases

- RESULT: vendors started creating proprietary solutions to deliver mobile devices and other rich media experiences (VW, Games, Sims, etc.)

Experience API Use Cases

- Gathered from "Project Tin Can"
  - Interviews with industry and academia
  - Input from Services via working groups
  - 100+ LETSI white papers
- Compiled and summarized on ADLnet.gov
- Results:
  - Make it simple…
  - Make it powerful…

How does it work?

How do we track 'Experiences'?

Activity Streams

- Collaboration between Google, Facebook, Microsoft and others
- <Actor> <Verb> <Object> (I did this)
- Allows reporting of experiences
  - Nikolaus posted a photo
  - Nikolaus liked a photo
  - Nikolaus commented on a photo

Learning Streams/Paths

- ≈10% of learning is formal ([@judyb](#))
- How do we capture the informal learning and tie to performance?
- What is an expert?
- The best performing learners dictate what works best
- Streams of experts can guide the path of new learners

Example Stream

- Nikolaus completed HTML5 training
- Nikolaus watched Khan Academy CSS 3 Intro
- Nikolaus authored Activity Streams blog
- Nikolaus attended iFest 2012
- Nikolaus spoke at iFest 2012
- Nikolaus read the Steve Jobs Book
- Nikolaus rated the Steve Jobs Book 5 stars

How do we track it?

Experience API

- Simple lightweight web service API
- **No restrictions on content**, just on how to report to tracking system
- Supports mobile out of the box, as well as any platform (out of browser!)
- Quick win to use the API to do SCORM-type tracking on any platform
- Tracks experiences, not just completions

Where do we store it?

Learning Record Store (LRS)

- LRS ≠ LMSs of today
- No content management
- No sequencing
- No navigation
- ONLY learning record storage
- CAN be an API to existing LMSs
- KEY: Removes innovation ceiling on content and servers

What types of new applications can be built using the Experience API?

Early Adopters

- "So some things get invented because it is suddenly possible to invent them."

-Vint Cerf

Innovative Apps at mLearnCon 2012

- Tappestry
- Mapdeck
- Storyline
- Gold Star

Which other technologies can help us track experiences in the TLA?

Hint: Web standards

Self-Describing Content

- The Semantic Web
- Schema.org, RDF(a), Open Graph, HTML meta tags, Microformats
- Allows systems to understand content
- Can dictate the contextually corresponding verb
  - Nikolaus Read <Article>
  - Nikolaus Watched <Video>
  - Nikolaus Baked <Recipe>

Open Graph Protocol

Nikolaus Hruska shared a link.
December 16, 2011 ⚙

Android users apparently safe from mugging

Mugger Rejects Victims' Non-iPhones
gizmodo.com

If you're worried about getting your phone snatched on a dark sidewalk, here's a top security tip: don't own an iPhone. A spat of attempted phone-jackings at Columbia University have one thing in common:

Like · Comment · Share

Nikolaus Hruska shared a link.
December 14, 2011 ⚙

Practicing for my Jeopardy appearance...
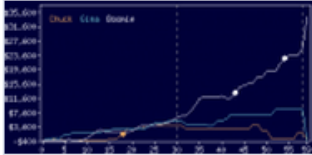
Jeopardy Question Archive
www.j-archive.com

An archive of clues and players for Jeopardy! show #6267.

Like · Comment · Share   👍 2

Ex. Facebook Open Graph Applications

- Allows custom applications to be built on top of the Facebook Platform

- Developers define
  - Objects
  - Verbs
  - Display rules
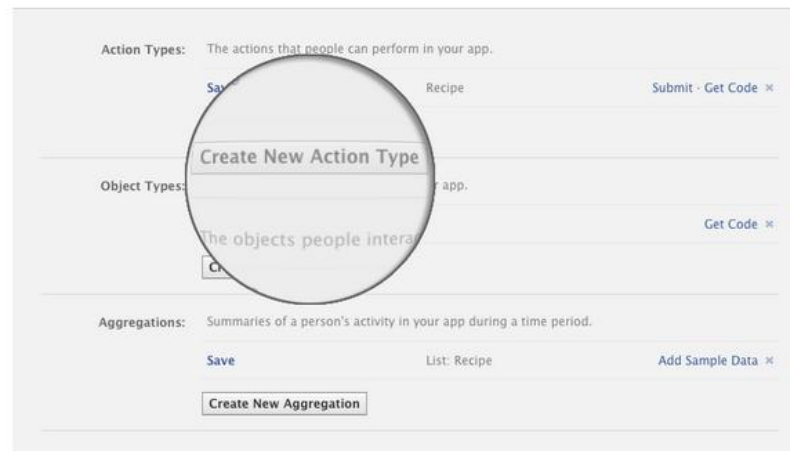
Define New <Verb>

Define Action Types

To define an Action Type, click on the "Create New Action Type" button in the Dashboard view and enter an action which describes a high-level social action users can do in your app.

Apps ▸ Recipe Box ▸ Open Graph

Action Types: The actions that people can perform in your app.

Sa...   Recipe   Submit · Get Code ×

Create New Action Type

Object Types: ...r app.

                                                              Get Code ×

The objects people intera...

Cr...
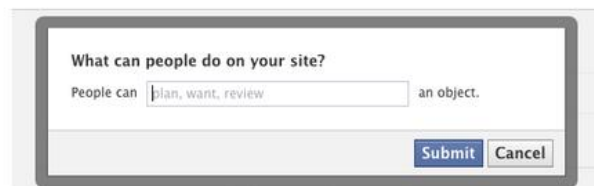
Aggregations: Summaries of a person's activity in your app during a time period.

Save   List: Recipe   Add Sample Data ×

Create New Aggregation

Start typing the action into the action dialog to get started:

What can people do on your site?

People can [plan, want, review] an object.

Submit   Cancel

Define Verb Tenses

Define new <Object>

Timeline Display

Semantic Web Example

Search "filters"

Ingredients	Yes	No
chocolate chips	☐	☐
baking soda	☐	☐
walnuts	☐	☐
vanilla extract	☐	☐
shortening	☐	☐
pecans	☐	☐
vanilla	☐	☐

Any cook time
Less than 15 min
Less than 30 min
Less than 60 min

Any calories
Less than 100 cal
Less than 300 cal
Less than 500 cal

Google's Rich Snippets Testing Tool

Extracted rich snippet data from the page

```
recipe
    Review Review-aggregate
        rating Rating
    photo =
        value = Chocolate-Dipped Chocolate Chip Cookies recipe
        href = http://www.kraftrecipes.com/assets/recipe_images/Chocolate-Covered_Cookie_Smores.jpg
    ingredient ingredient
        amount = 4
        name = BAKER'S Semi-Sweet Chocolate
    ingredient ingredient
        amount = 18
        name = CHIPS AHOY! Cookies
    ingredient ingredient
        amount = 1/2
        name = PLANTERS Nuts
    ingredient ingredient
        amount = 1/2
        name = BAKER'S ANGEL FLAKE Coconut
    instructions Instructions
        instruction = MICROWAVE chocolate in small microwavable bowl on HIGH 2 min. or until chocolate is almost melted, stirring after 1 min. Stir until chocolate
        is completely melted.
        instruction = DIP half of each cookie into chocolate, then roll in nuts or coconut. Place on wax paper-covered tray.
        instruction = LET stand at least 1 hour or until chocolate is firm.
    nutrition Nutrition
        calories = 130
    nutrition Nutrition
        fat = 8 g
    nutrition Nutrition
        saturatedFat = 3 g
    nutrition Nutrition
        cholesterol = 0 mg
    nutrition Nutrition
        carbohydrates = 14 g
    nutrition Nutrition
        fiber = 1 g
    nutrition Nutrition
        sugar = 8 g
    nutrition Nutrition
        protein = 2 g
    recipeType = Desserts
    name = Chocolate-Dipped Chocolate Chip Cookies
    prepTime = PT10M
    totalTime = PT10M
    yield = 18 servings, 1 cookie each.
```

Applied to Learning

- Could filter learning content by: Grade, Level of Difficulty, Prerequisites, Subject, and whether the content was authored for use by teachers or students

- Learning Resource Metadata Initiative (LRMI)
  - creating a common eLearning vocabulary for schema.org
  - Allows embedding rich semantic data into our learning resources

What Does it Mean to You?

- New markets created - we're enabling programmers in basements to start hacking node.js, PHP, Objective C, Java, C#, Python...
- New experiences enabled - can track real-time progress throughout lifecycle of learning activities
- Track both formal and informal learning
- Can track "lifelong learning"

ADL Tech Team Demos

QR Code Scanning Game

- Mobile learning allows location-based learning in context
- It is expected that the questions would correspond with the destination
- Works great at conferences - allows asynchronous exploration of the floor
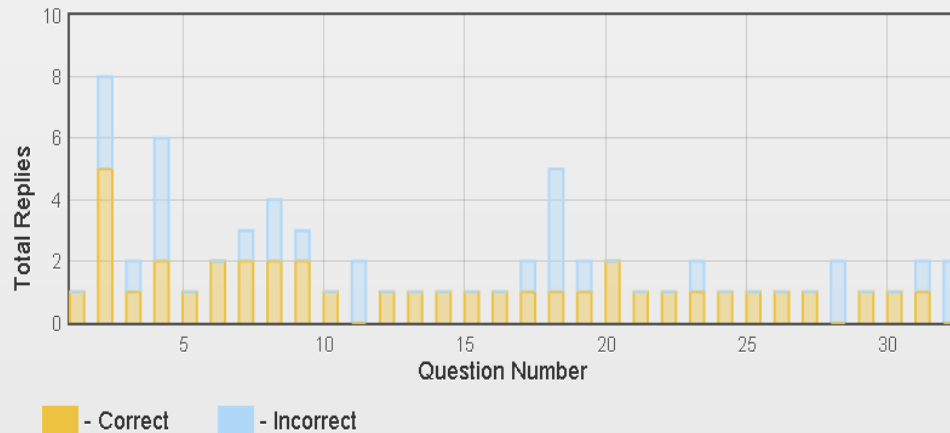- Many different real-world scenarios are possible
- Open Source – http://github.com/adlnet
- HTML5, jQuery based

ADL 'Tin Can Rally' Dashboard

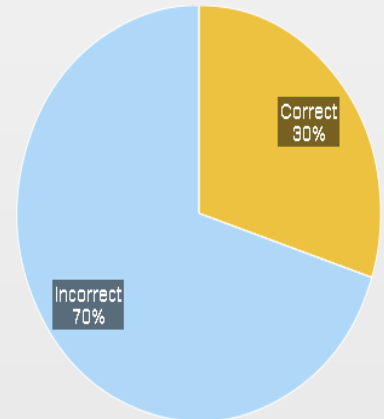start playing now at: http://mlc.adlnet.gov

25 Players

- aaa is now playing!
- Alex Turkov... is now playing!
- Alex Turkov... is now playing!
- ryngme is now playing!
- David Mende... is now playing!
- kbporter is now playing!
- Clairesch is now playing!
- Clairesch is now playing!
- EricJohnson is now playing!

65 QR Codes Scanned

Total Replies vs Question Number

- ■ - Correct
- ■ - Incorrect

10 Solve Attempts

Correct 30%
Incorrect 70%

39 Tiles Uncovered

- Sue got a letter!
- Sue got a letter!
- ryngme got a letter!
- Rick Raymer got a letter!
- Rick Raymer got a letter!
- Rick Raymer got a letter!
- Rick Raymer got a letter!
- Sue got a letter!
- Sue got a letter!
- Sue got a letter!

Top Scanners

Scanner	Count
Sue	12
Rick Raymer	11
Ccolton	10
nhruska	8
Jimpfarrell	5
Mark dewey	5
andyj	4
Jono MLearncon	4
clembotic	4
EricJohnson	3

3 Puzzle Solvers

- Sue solved the puzzle!
- Rick Raymer solved the puzzle!
- Ccolton solved the puzzle!

Informal Learning Bookmarklet

- How do I capture the fact that I saw value in a web page or document?
- Similar to "Read it Later", "Save on delicious"
- TODO: start looking at semantics of pages, trends over large datasets, linking external resources (or finding new ones) from learners, crowd sourcing content
- Tracks informal path of best learners as a model for new learners

Virtual World Framework Sample

- Advanced example integrating several technologies
- VWF, Web sockets, webGL, jQuery, Tin Can API
- Purely browser based, without plug-ins

The Big Picture

- How does this fit into the larger picture of what we're doing at ADL with Next Generation SCORM?
- This is the runtime API
- This first round of products will report learning progress
- Looking ahead - report DURING the activities to make formative assessments
- We're looking at the semantic web, machine learning, intelligent tutors, etc.

How to get involved…

- http://tincan.adlnet.gov
  - Wiki http://tincanapi.wikispaces.com
  - Google Groups
    - Stakeholders, Adopters, Spec Contributors
  - Developers – http://github.com/adlnet
    - Open Source LRS
    - "Content" Examples

Questions?

- Nikolaus Hruska
- Email: nikolaus.hruska.ctr@adlnet.gov
- Twitter: @nikolaushruska

http://www.adlnet.gov